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Ref. No. 27712 (formerly 01337.US1)

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

1. (Cancelled)

2. (Previously Presented) The method of claim 20, wherein each R<sup>4</sup> is independently

- (a) H,
- (b) halo,
- (e) SR<sup>12</sup>,
- (f) S(O)<sub>m</sub>R<sup>13</sup>,
- (g) NR<sup>9</sup>R<sup>10</sup>,
- (h) NR<sup>9</sup>S(O)<sub>m</sub>R<sup>13</sup>,
- (i) NR<sup>9</sup>C(=O)OR<sup>13</sup>,
- (j) phenyl optionally substituted by one or more R<sup>8</sup>,
- (k) heteroaryl optionally substituted by one or more R<sup>8</sup>,
- (l) cyano,
- (m) nitro,
- (n) CONR<sup>9</sup>R<sup>10</sup>,
- (o) CO<sub>2</sub>R<sup>12</sup>,
- (p) C(=O)R<sup>13</sup>,
- (q) C(=NOR<sup>12</sup>)R<sup>13</sup>,
- (s) NR<sup>9</sup>C(=O)-R<sup>12</sup>,
- (t) C<sub>1-7</sub>alkyl, C<sub>1-7</sub> alkenyl or C<sub>1-7</sub> alkynyl each of which is optionally substituted by one or more R<sup>11</sup>, or
- (u) het<sup>1</sup> optionally substituted by one or more R<sup>8</sup>.

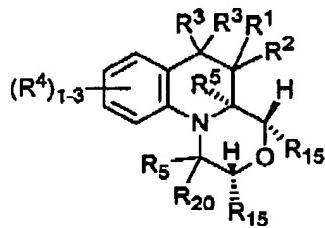
3. (Previously Presented) The method of claim 2, wherein each R<sup>4</sup> is independently selected from NO<sub>2</sub>, H, Br, F, CF<sub>3</sub>, CN, NH<sub>2</sub>, -C(O)-OCH<sub>3</sub>, -S-CH<sub>3</sub>, -S(O)<sub>2</sub>-CH<sub>3</sub>, -N(OCH<sub>3</sub>)-CH<sub>3</sub>, -NH-C(O)-O-tbutyl, -NH-C(O)-CH<sub>3</sub>, heteroaryl optionally

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substituted by one or more R<sup>8</sup>, het<sup>1</sup> optionally substituted by one or more R<sup>8</sup>, -S(O)<sub>2</sub>-CH<sub>3</sub>, or phenyl optionally substituted by one or more of NO<sub>2</sub>, Cl, F, -OCH<sub>3</sub>, and -OCF<sub>3</sub>.

4. (Previously Presented) The method of claim 20, wherein each R<sup>3</sup> is H.
5. (Previously Presented) The method of claim 20, wherein R<sup>1</sup> is -C(O)R<sup>6</sup>.
6. (Previously Presented) The method of claim 20, wherein R<sup>2</sup> is -C(O)R<sup>7</sup>.
7. (Previously Presented) The method of claim 6, wherein R<sup>1</sup> is -C(O)R<sup>6</sup>
8. (Previously Presented) The method of claim 7, wherein R<sup>6</sup> and R<sup>7</sup> form -N(R<sup>17</sup>)-C(O)-N(R<sup>17</sup>)- or -N(R<sup>17</sup>)-C(S)-N(R<sup>17</sup>)-.
9. (Canceled)
10. (Canceled)
11. (Currently Amended) The method of claim 20, wherein each R<sup>15</sup> is independently H, or C<sub>1-7</sub> alkyl optionally substituted by one or more R<sup>11</sup> substituents.
12. (Previously Presented) The method of claim 11, wherein X is -C(H)(C<sub>1-4</sub> alkyl)-O-C(H)(C<sub>1-4</sub> alkyl)-.
13. (Currently Amended) The method of claim 20, wherein the compound has the formula of



and each R<sub>15</sub> is independently (b), (c), (d), (e), (f),

or (g)

(b) OR<sup>11</sup>

(c) Oxo,

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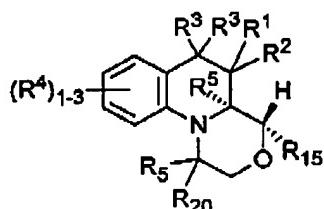
(d) C<sub>1-7</sub> alkyl which is optionally substituted by one or more R<sup>11</sup> substituents.

(e) C<sub>3-8</sub> cycloalkyl, C<sub>3-8</sub> cycloalkenyl or C<sub>3-8</sub> cycloalkynyl each of which is optionally substituted by one or more R<sup>11</sup> substituents.

(f) aryl optionally substituted by one or more R<sup>8</sup>, or

(g) heteroaryl optionally substituted by one or more R<sup>8</sup>.

14. (Currently Amended) The method of claim 20, wherein the compound has the formula of



and each R<sub>15</sub> is independently (b), (c), (d), (e), (f),

or (g)

(b) OR<sup>11</sup>.

(c) Oxo,

(d) C<sub>1-7</sub> alkyl which is optionally substituted by one or more R<sup>11</sup> substituents.

(e) C<sub>3-8</sub> cycloalkyl, C<sub>3-8</sub> cycloalkenyl or C<sub>3-8</sub> cycloalkynyl each of which is optionally substituted by one or more R<sup>11</sup> substituents.

(f) aryl optionally substituted by one or more R<sup>8</sup>, or

(g) heteroaryl optionally substituted by one or more R<sup>8</sup>.

15. (Previously Presented) The method of claim 20, wherein R<sup>16</sup> is (C=O)OR<sup>13</sup> or C<sub>1-7</sub> alkyl.

16. (Previously Presented) The method of claim 20, wherein each R<sup>5</sup> is independently H or C<sub>1-7</sub> alkyl.

17. (Previously Presented) The method of claim 20 wherein the compound comprises

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(2R,4S,4aS)-2,4-dimethyl-8-nitro-1,2,4,4a-tetrahydro-2'H,6H-spiro[1,4-oxazino[4,3-a]quinoline-5,5'-pyrimidine]-2',4',6'(1'H,3'H)-trione;

1,2,4,4a-Tetrahydro-2,4-dimethylspiro[[1,4]oxazino[4,3-a]quinoline-5(6H), 5' (2'H)-pyrimidine]-2',4',6' (1' H,3' H)-trione;

8-Bromo-1,2,4,4a-tetrahydro-2,4-dimethylspiro[[1,4]oxazino[4,3-a]quinoline-5(6H), 5' (2' H)-pyrimidine]-2',4',6' (1' H,3' H)-trione;

8-Fluoro-1,2,4,4a-tetrahydro-2,4-dimethylspiro[[1,4]oxazino[4,3-a]quinoline-5(6H), 5' (2' H)-pyrimidine]-2',4',6' (1' H,3' H)-trione;

1,2,4,4a-Tetrahydro-2,4-dimethyl-8-trifluoromethylspiro[[1,4]oxazino]4,3-a]quinoline-5(6H), 5' (2' H)-pyrimidine]-2',4',6' (1' H,3' H)-trione;

1,1',2, 3'4,4',4a, 6'-Octahydro-2,4',6'-trioxospiro[[1,4]oxazino[4,3-a] quinoline-5(6H), 5' (2' H)-pyrimidine]-8-carbonitrile;

1,2,4,4a-Tetrahydro-2,4-dimethyl-8-carboxamidespiro[[1,4]oxazino[4,3-a]quinoline-5(6H), 5' (2' H)-pyrimidine]-2',4',6' (1' H,3' H)-trione;

1,2,4,4a-Tetrahydro-8-nitrospiro[[1,4]oxazino[4,3-a]quinoline-5(6H), 5' (2' H)-pyrimidine]-2',4',6' (1' H,3' H)-trione;

1,2,4,4a-Tetrahydro-2,4-dimethylspiro[[1,4]oxazino[4,3-a]quinoline-5(6H), 5' (2'H)-pyrimidine]-2',4',6' (1' H,3' H)-trione;

1,2,4,4a-Tetrahydro-1,4a-dimethyl-8-nitrospiro[[1,4]oxazino[4,3-a]quinoline-5(6H), 5' (2' H)-pyrimidine]-2',4',6' (1' H,3' H)-trione;

8-Bromo-1,2,4,4a-tetrahydro-cis-2,4-dimethylspiro[[1,4]oxazino[4,3-a]quinoline-5(6H), 5' (2' H)-pyrimidine]-4'-thioxo-2',6' (1' H,3' H)-dione;

8-Bromo-1,2,4,4a-tetrahydro-cis-2,4-dimethylspiro[[1,4]oxazino[4,3-a]quinoline-5(6H), 5' (2'H)pyrimidine]-2',4',6' (1' methyl, 3' methyl)-trione;

*N*-[1,1',2,3',4,4',4a,6'-Octahydro-2,4-dimethyl-2',4',6'-trioxospiro[[1,4]oxazino[4,3-a]quinolone-5(6H),5'(2'H)-pyrimidin]-8-yl]acetamide;

*tert*-butyl 1,1',2, 3',4,4',4a,6'-Octahydro-2,4-dimethyl-2',4',6'-trioxospiro[[1,4]oxazino[4,3-a]quinolone-5(6H),5'(2'H)-pyrimidin]-8-ylcarbamate;

8-Amino-1,2,4,4a-tetrahydro-2,4-dimethylspiro[[1,4]oxazino[4,3-a]quinolone-5(6H),5'(2'H)-pyrimidine]-2',4',6' (1'H,3' H)-trione monohydrochloride;

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9-Bromo-1,2,4,4a-tetrahydro-2,4-dimethyl-8-nitrospiro[[1,4]oxazino[4,3-a]quinoline-5(6H), 5'(2'H)-pyrimidine]-2',4',6'(1'H,3'H)-trione;

8-Acetyl-1,2,4,4a-tetrahydro-2,4-dimethylspiro[[1,4]oxazino[4,3-a]quinoline-5(6H), 5'(2'H)-pyrimidine]-2',4',6' (1'H,3'H)-trione;

8-Ethanone-O-methyloxime-1-1,2,4,4a-tetrahydro-2,4-dimethylspiro[[1,4]oxazino[4,3-a]quinoline-5(6H), 5'(2'H)-pyrimidine]-2',4',6' (1'H,3'H)-trione;

1,2,4,4a-Tetrahydro-2,4-dimethyl-8-(methylsulfonyl)spiro[[1,4]oxazino [4,3-a]quinoline-5(6H), 5'(2'H)-pyrimidine]-2',4',6'(1'H,3'H)-trione;

1,2,4,4a-Tetrahydro-2,4-dimethyl-8-(methylsulfinyl)spiro[[1,4]oxazino [4,3-a]quinoline-5(6H), 5'(2'H)-pyrimidine]-2',4',6'(1'H,3'H)-trione;

1,2,4,4a-Tetrahydro-2,4-dimethyl-8-(methylthio)spiro[[1,4]oxazino[4,3-a]quinoline-5(6H), 5'(2'H)-pyrimidine]-2',4',6'(1'H,3'H)-trione;

1,2,4,4a-Tetrahydro-2,4-dimethyl-9-nitrospiro[[1,4]oxazino[4,3-a]quinoline-5(6H), 5'(2'H)-pyrimidine]-2',4',6'(1'H,3'H)-trione;

1,2,4,4a-Tetrahydro-2,4-dimethyl-8-nitrospiro[[1,4]oxazino[4,3-a]quinoline-5(6H), 5'(2'H)-pyrimidine]-2',4',6'(1'methyl,3'methyl)-trione;

1,2,4,4a-Tetrahydro-2,4-dimethyl-8-nitrospiro[[1,4]oxazino[4,3-a]quinoline-5(6H), 5'(2'H)-pyrimidine]-2',4',6'(1'H, 3'methyl)-trione;

1,2,4,4a-Tetrahydro-4-methyl-8-nitrospiro[[1,4]oxazino[4,3-a]quinoline-5(6H), 5'(2'H)-pyrimidine]-2',4',6'(1'H,3'H)-trione;

1,2,4,4a-Tetrahydro-2-methyl-8-nitrospiro[[1,4]oxazino[4,3-a]quinoline-5(6H), 5'(2'H)-pyrimidine]-2',4',6'(1'H,3's)-trione;

1,1',2'3'4'4'a-Hexahydro-2',4'-dimethyl-1,3-dioxospiro[2H-indene-2,5'(6'H)-[1,4]oxazino[4,3-a]quinoline]-8'-carbonitrile;

1,2,4,4a-Tetrahydro-2,4-dimethyl[1,4]oxazino[4,3-a]quinoline-5,5,8(6H)-tricarbonitrile;

8-Bromo-1,2,4,4a-tetrahydro-2,4-dimethyl[1,4]oxazino[4,3-a]quinoline-5,5(6H)-dicarbonitrile;

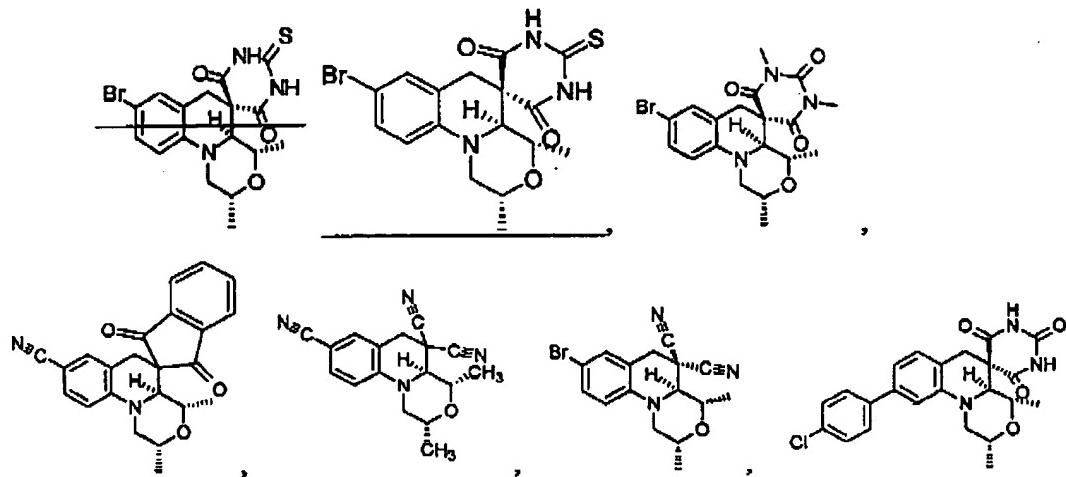
9-(4-Chlorophenyl)-1,2,4,4a-tetrahydro-2,4-dimethylspiro[[1,4]oxazino[4,3-a]quinoline-5(6H), 5'(2'H)-pyrimidine]-2',4',6'(1'H,3'H)-trione;

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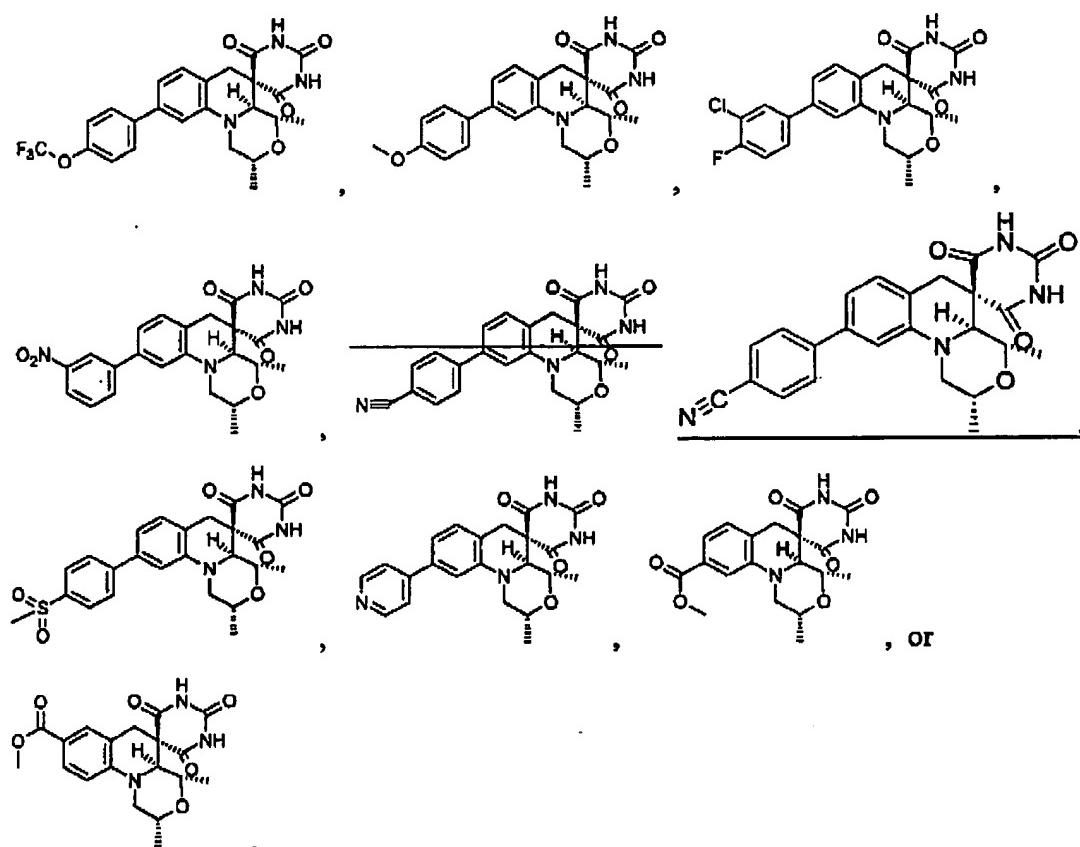
1,2,4,4a-Tetrahydro-2,4-dimethyl-9-[4-(trifluoromethoxy)phenyl]spiro[[1,4]oxazino[4,3-*a*]quinoline-5(6*H*),5'(2'*H*)pyrimidine]-2',4',6'(1'*H*,3'*H*)-trione;  
1,2,4,4a-Tetrahydro-9-(methoxyphenyl)-2,4-dimethylspiro[[1,4]oxazino[4,3-*a*]quinoline-5(6*H*),5'(2'*H*)-pyrimidine]-2',4',6'(1'*H*,3'*H*)-trione;  
9-(3-Chloro-4-fluorophenyl)-1,2,4,4a-,tetrahydro-2,4-dimethylspiro[[1,4]oxazino[4,3-*a*]quinoline-5(6*H*),5'(2'*H*)-pyrimidine]-2',4',6'(1'*H*,3'*H*)-trione;  
1,2,4,4a-Tetrahydro-2,4-dimethyl-9-(3-nitrophenyl)spiro[[1,4]oxazino[4,3-*a*]quinoline-5(6*H*),5'(2'*H*)-pyrimidine]-2',4',6'(1'*H*,3'*H*)trione;  
1,1',2,3',4,4',4a,6'-Octahydro-2-4-dimethyl-2',4',6'-trioxospiro[[1,4]oxazino[4,3-*a*]quinoline-5(6*H*),5(2'*H*)-pyrimidin]-9-yl]benzonitrile;  
1,2,4,4a-Tetrahydro-2,4-dimethyl-9-[4-(methylsulfonyl)phenyl]spiro[[1,4]oxazino[4,3-*a*]quinoline-5(6*H*),5'(2'*H*)-pyrimidine]-2',4',6'(1'*H*,3'*H*)-trione;  
1,2,4,4a-Tetrahydro-2,4-dimethyl-9-(4-pyridinyl)spiro[[1,4]oxazino[4,3-*a*]quinoline-5(6*H*),5'(2'*H*)-pyrimidine]-2',4',6'('H,3'*H*)-trione;  
Methyl-1,1'-2,3',4,4a,6'-Octahydro-2,4-dimethyl-2',4',6'-trioxospiro[[1,4]oxazino [4,3-*a*]quinoline-5(6*H*),5'(2'*H*)-pyrimidine]-9-carboxylate; or  
Methyl-1,1'-2,3',4,4a,6'-Octahydro-2,4-dimethyl-2',4',6'-trioxospiro[[1,4]oxazino [4,3-*a*]quinoline-5(6*H*),5'(2'*H*)-pyrimidine]-8-carboxylate.

**18. (Previously Presented)** The method of claim 20 wherein the compound comprises



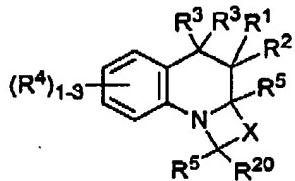
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19. (Cancelled)

20. (Currently Amended) A method for the treatment of bacterial infections in mammals comprising administration of an effective amount of a compound of formula I, including enantiomeric, diastereomeric, or tautomeric isomers thereof, or any pharmaceutically acceptable salt thereof to said mammal;

**I**

wherein,

 $\text{R}^1$  is

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- (a)  $R^{12}$
- (b)  $C(=O)R^6$ , or
- (c) CN;

 $R^2$  is

- (a)  $R^{12}$
- (b)  $C(=O)R^7$ ,
- (c) CN,
- (d)  $-CH_2-R^7$ ,
- (e)  $-NR^{17}R^7$ ,
- (f)  $-CH_2COR^7$ , or
- (g)  $-CH_2CH_2COR^7$ ;

Each  $R^3$  is independently

- (a) H,
- (b)  $R^{12}$ ,
- (c)  $C_{1-7}$  alkyl,  $C_{1-7}$  alkenyl or  $C_{1-7}$  alkynyl each of which is optionally substituted by one or more  $R^{11}$ ,
- (d)  $C_{3-8}$  cycloalkyl,  $C_{3-8}$  cycloalkenyl or  $C_{3-8}$  cycloalkynyl each of which is optionally substituted by one or more  $R^{11}$ ,
- (e) aryl optionally substituted by one or more  $R^8$ ,
- (f) heteroaryl optionally substituted by one or more  $R^8$ ,
- (g) halo, or
- (h) both  $R_3$  taken together are oxo;

Each  $R^4$  is independently

- (a) H,
- (b) halo,
- (c)  $OR^{12}$ ,
- (d)  $OC(=O)NR^9R^{10}$ ,
- (e)  $SR^{12}$ ,
- (f)  $S(O)_mR^{13}$ ,
- (g)  $NR^9R^{10}$ ,
- (h)  $NR^9S(O)_mR^{13}$ ,

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- (i)  $\text{NR}^9\text{C}(=\text{O})\text{OR}^{13}$ ,
- (j) phenyl optionally substituted by one or more  $\text{R}^8$ ,
- (k) heteroaryl optionally substituted by one or more  $\text{R}^8$ ,
- (l) cyano,
- (m) nitro,
- (n)  $\text{CONR}^9\text{R}^{10}$ ,
- (o)  $\text{CO}_2\text{R}^{12}$ ,
- (p)  $\text{C}(=\text{O})\text{R}^{13}$ ,
- (q)  $\text{C}(=\text{NOR}^{12})\text{R}^{13}$ ,
- (r)  $\text{S}(\text{O})_m\text{NR}^9\text{R}^{10}$ ,
- (s)  $\text{NR}^9\text{C}(=\text{O})-\text{R}^{12}$ ,
- (t)  $\text{C}_{1-7}$  alkyl,  $\text{C}_{1-7}$  alkenyl or  $\text{C}_{1-7}$  alkynyl each of which is optionally substituted by one or more  $\text{R}^{11}$ ,

(u)  $\text{C}_{3-8}$  cycloalkyl,  $\text{C}_{3-8}$  cycloalkenyl or  $\text{C}_{3-8}$  cycloalkynyl each of which is optionally substituted by one or more  $\text{R}^{11}$ ,

- (v)  $\text{N}_3$ ,
- (w) het<sup>1</sup> optionally substituted by one or more  $\text{R}^8$ , or
- (x)  $\text{C}(\text{O})\text{O}-\text{C}_{1-4}\text{alkyl}-\text{R}^{12}$ ;

Each  $\text{R}^5$  is independently,

- (a) H,
- (b)  $\text{C}_{1-7}$  alkyl,  $\text{C}_{1-7}$  alkenyl or  $\text{C}_{1-7}$  alkynyl each of which is optionally substituted by one or more  $\text{R}^{11}$ ,
- (c)  $\text{C}_{3-8}$  cycloalkyl,  $\text{C}_{3-8}$  cycloalkenyl or  $\text{C}_{3-8}$  cycloalkynyl each of which is optionally substituted by one or more  $\text{R}^{11}$ ,

- (d) aryl optionally substituted by one or more  $\text{R}^8$ , or
- (e) heteroaryl optionally substituted by one or more  $\text{R}^8$ ;

$\text{R}^6$  and  $\text{R}^7$  are independently;

- (a)  $\text{OR}^{12}$ ,
- (b)  $\text{NR}^9\text{R}^{10}$ ,
- (c)  $\text{R}^{13}$ , or

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(e) R<sup>6</sup> and R<sup>7</sup> together with the 2 carbons to which they are attached form cyclohexane-1,3-dione optionally substituted by one or more R<sup>13</sup>, cyclopentane-1,3-dione optionally substituted by one or more R<sup>13</sup>, R<sup>6</sup> and R<sup>7</sup> together form -N(R<sup>17</sup>)-S(O)<sub>m</sub>-N(R<sup>17</sup>)-, -N(R<sup>17</sup>)-C(O)-N(R<sup>17</sup>)-, -N(R<sup>17</sup>)-C(S)-N(R<sup>17</sup>)-, -N(R<sup>17</sup>)-N(R<sup>17</sup>)-, -N(R<sup>17</sup>)-C(O)-, or -N(R<sup>17</sup>)-, or R<sup>6</sup> and R<sup>7</sup> together form a phenyl ring;

R<sup>8</sup> is

- (a) H,
- (b) halo,
- (c) OR<sup>12</sup>,
- (d) OCF<sub>3</sub>,
- (e) SR<sup>12</sup>,
- (f) S(O)<sub>m</sub>R<sup>13</sup>,
- (g) NR<sup>9</sup>R<sup>10</sup>,
- (h) NR<sup>9</sup>S(O)<sub>m</sub>R<sup>13</sup>,
- (i) NR<sup>9</sup>C(=O)OR<sup>13</sup>,
- (j) phenyl optionally substituted by halo, cyano, C<sub>1-7</sub>alkyl, or C<sub>1-7</sub>alkoxy, in the alkyl portion of the C<sub>1-7</sub>alkyl and C<sub>1-7</sub>alkoxy is optionally substituted by one or more R<sup>11</sup>;
- (k) heteroaryl optionally substituted by halo, C<sub>1-7</sub>alkyl, or C<sub>1-7</sub>alkoxy,
- (l) cyano,
- (m) nitro,
- (n) CONR<sup>9</sup>R<sup>10</sup>,
- (o) CO<sub>2</sub>R<sup>12</sup>,
- (p) C(=O)R<sup>13</sup>,
- (q) C(=NOR<sup>12</sup>)R<sup>13</sup>,
- (r) S(O)<sub>m</sub>NR<sup>9</sup>R<sup>10</sup>,
- (s) NR<sup>9</sup>C(=O)-R<sup>12</sup>,
- (t) C<sub>1-7</sub>alkyl, C<sub>1-7</sub> alkenyl or C<sub>1-7</sub> alkynyl each of which is optionally substituted by one or more R<sup>11</sup>,
- (u) C<sub>3-8</sub> cycloalkyl, C<sub>3-8</sub> cycloalkenyl or C<sub>3-8</sub> cycloalkynyl each of which is optionally substituted by one or more R<sup>11</sup>,

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(v) -C(O)H, or

(w) -het<sup>1</sup>; $R^9$  and  $R^{10}$  are independently

(a) H,

(b) OR<sup>12</sup>,(c) aryl optionally substituted by one or more R<sup>14</sup>,(d) heteroaryl optionally substituted by one or more R<sup>14</sup>,(e) C<sub>1-7</sub>alkyl which is optionally substituted by one or more R<sup>11</sup>,(f) C<sub>3-8</sub>cycloalkyl which is optionally substituted by one or more R<sup>11</sup>,(g) (C=O)R<sup>13</sup>, or(h)  $R^9$  and  $R^{10}$  together with the nitrogen to which they are attachedform morpholine, pyrrolidine, piperidine, thiazine, piperazine, each of the morpholine, pyrrolidine, piperidine, thiazine, piperazine being optionally substituted with R<sup>11</sup>;R<sup>11</sup> is

(a) oxo,

(b) phenyl optionally substituted by one or more R<sup>14</sup>,(c) OR<sup>12</sup>,(d) SR<sup>12</sup>,(e) NR<sup>12</sup>R<sup>12</sup>,

(f) halo,

(g) CO<sub>2</sub>R<sup>12</sup>,(h) CONR<sup>12</sup>R<sup>12</sup>,(i) C<sub>1-7</sub>alkyl, C<sub>1-7</sub> alkenyl or C<sub>1-7</sub> alkynyl each of which is optionally substituted by one or more oxo, halo, OR<sup>12</sup>, SR<sup>12</sup>, C<sub>1-7</sub>alkyl, or NR<sup>12</sup>R<sup>12</sup> substituents, or(j) C<sub>3-8</sub> cycloalkyl, C<sub>3-8</sub> cycloalkenyl or C<sub>3-8</sub> cycloalkynyl each of which is optionally substituted by one or more oxo, halo, OR<sup>12</sup>, SR<sup>12</sup>, C<sub>1-7</sub>alkyl, or NR<sup>12</sup>R<sup>12</sup> substituents;R<sup>12</sup> is

(a) H,

(b) C<sub>1-7</sub>alkyl, C<sub>1-7</sub> alkenyl or C<sub>1-7</sub> alkynyl each of which is optionally substituted by oxo, halo, C<sub>1-7</sub>alkyl, or C<sub>1-7</sub>alkoxy substituents,

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(c)  $C_{3-8}$  cycloalkyl,  $C_{3-8}$  cycloalkenyl or  $C_{3-8}$  cycloalkynyl each of which is optionally substituted by one or more oxo, halo,  $C_{1-7}$ alkyl, or  $C_{1-7}$ alkoxy substituents,

(d) aryl optionally substituted by one or more halo,  $C_{1-7}$ alkyl, or  $C_{1-7}$ alkoxy substituents, or

(e) heteroaryl optionally substituted by one or more halo,  $C_{1-7}$ alkyl, or  $C_{1-7}$ alkoxy substituents;

$R^{13}$  is

(a)  $C_{1-7}$  alkyl which is optionally substituted by one or more by oxo, halo, carboxyl,  $C_{1-7}$ alkyl, or  $C_{1-7}$ alkoxy substituents,

(b)  $C_{3-8}$  cycloalkyl,  $C_{3-8}$  cycloalkenyl or  $C_{3-8}$  cycloalkynyl each of which is optionally substituted by one or more by oxo, halo,  $C_{1-7}$ alkyl, or  $C_{1-7}$ alkoxy substituents,

(c) aryl optionally substituted by one or more halo,  $C_{1-7}$ alkyl, or  $C_{1-7}$ alkoxy substituents;

(d) heteroaryl optionally substituted by one or more halo,  $C_{1-7}$ alkyl, or  $C_{1-7}$ alkoxy substituents, or

(e)  $-C(O)OH$

$R^{14}$  is

(a) H,

(b) halo,

(c)  $C_{1-7}$ alkyl,

(d)  $OR^{12}$ ,

(e)  $OCF_3$ ,

(f)  $SR^{12}$ ,

(g)  $S(O)_mR^{13}$ ,

(h)  $NR^{12}R^{12}$ ,

(i)  $NR^{12}S(O)_mR^{13}$ ,

(j)  $NR^{12}C(=O)OR^{13}$ ,

(k) phenyl optionally substituted by halo,  $C_{1-7}$ alkyl, or  $C_{1-7}$ alkoxy,

(l) heteroaryl optionally substituted by halo,  $C_{1-7}$ alkyl, or  $C_{1-7}$ alkoxy,

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- (m) cyano,
- (n) nitro,
- (o) CONR<sup>12</sup>R<sup>12</sup>,
- (p) CO<sub>2</sub>R<sup>12</sup>,
- (q) C(=O)R<sup>13</sup>,
- (r) C(=NOR<sup>12</sup>)R<sup>13</sup>,
- (s) S(O)<sub>m</sub>NR<sup>12</sup>R<sup>12</sup>,
- (t) NR<sup>9</sup>C(=O)-R<sup>12</sup>,

(u) C<sub>1-7</sub> alkyl, C<sub>1-7</sub> alkenyl or C<sub>1-7</sub> alkynyl each of which is optionally substituted by oxo, halo, OR<sup>12</sup>, SR<sup>12</sup>, C<sub>1-7</sub>alkyl, or NR<sup>12</sup>R<sup>12</sup> substituents, or

(v) C<sub>3-8</sub> cycloalkyl, C<sub>3-8</sub> cycloalkenyl or C<sub>3-8</sub> cycloalkynyl each of which is optionally substituted by oxo, halo, OR<sup>12</sup>, SR<sup>12</sup>, C<sub>1-7</sub>alkyl, or NR<sup>12</sup>R<sup>12</sup> substituents;

X is -C(R<sup>15</sup>)<sub>2</sub>-O-C(R<sup>15</sup>)<sub>2</sub>;

Each R<sup>15</sup> is independently

- (a) H,
- (b) OR<sup>11</sup>,
- (c) Oxo,
- (d) C<sub>1-7</sub> alkyl which is optionally substituted by one or more R<sup>11</sup> substituents,

(e) C<sub>3-8</sub> cycloalkyl, C<sub>3-8</sub> cycloalkenyl or C<sub>3-8</sub> cycloalkynyl each of which is optionally substituted by one or more R<sup>11</sup> substituents,

- (f) aryl optionally substituted by one or more R<sup>8</sup>, or
- (g) heteroaryl optionally substituted by one or more R<sup>8</sup>;

R<sup>16</sup> is

- (a) H
- (b) OR<sup>12</sup>,
- (c) (C=O)R<sup>13</sup>,
- (d) (C=O)OR<sup>13</sup>,
- (e) (C=O)NR<sup>9</sup>R<sup>10</sup>,
- (f) S(O)<sub>m</sub>R<sup>13</sup>,

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(g)  $S(O)_mNR^9R^{10}$ ,(h)  $C_{1-7}$  alkyl which is optionally substituted by one or more  $R^{11}$  substituents,(i)  $C_{3-8}$  cycloalkyl,  $C_{3-8}$  cycloalkenyl or  $C_{3-8}$  cycloalkynyl each of which is optionally substituted by one or more  $R^{11}$  substituents,(j) aryl optionally substituted by one or more  $R^8$ , or(k) heteroaryl optionally substituted by one or more  $R^8$ ; $R^{17}$  is

(a) H,

(b) -OH, or

(c)  $C_{1-4}$  alkyl; $R^{19}$  is

(a) H,

(b)  $OR^{11}$ ,

(c) Oxo,

(d)  $C_{1-7}$  alkyl which is optionally substituted by one or more  $R^{11}$  substituents,(e)  $C_{3-8}$  cycloalkyl,  $C_{3-8}$  cycloalkenyl or  $C_{3-8}$  cycloalkynyl each of which is optionally substituted by one or more  $R^{11}$  substituents,(f) aryl optionally substituted by one or more  $R^8$ , or(g) heteroaryl optionally substituted by one or more  $R^8$ ; $R^{20}$  is

(a) H,

(b)  $C_{1-7}$  alkyl,  $C_{1-7}$  alkenyl or  $C_{1-7}$  alkynyl each of which is optionally substituted by one or more  $R^{11}$ ,(c)  $C_{3-8}$  cycloalkyl,  $C_{3-8}$  cycloalkenyl or  $C_{3-8}$  cycloalkynyl each of which is optionally substituted by one or more  $R^{11}$ ,(d) aryl optionally substituted by one or more  $R^8$ ,(e) heteroaryl optionally substituted by one or more  $R^8$ , or(f)  $R^{20}$  and  $R^{19}$ , taken together, form- $CH_2-$ ;

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wherein, "aryl" denotes a phenyl radical or an ortho-fused bicyclic carbocyclic radical having about nine to ten ring atoms in which at least one ring is aromatic;

wherein, "heteroaryl" encompasses a radical attached via a ring carbon or ring nitrogen of a monocyclic aromatic ring containing five or six ring atoms consisting of carbon and 1, 2, 3, or 4 heteroatoms, selected from oxygen (-O-), sulfur (-S-), ~~oxygenated sulfur such as sulfinyl (S=O) and sulfonyl ( S(=O)2~~, or nitrogen N(Z) wherein Z is absent or is H, O, C<sub>1-4</sub>alkyl, phenyl or benzyl, or a radical of an ortho-fused bicyclic heterocycle of about eight to ten ring atoms derived therefrom;

het<sup>1</sup> is a C- or N-linked five- (5), six- (6), seven- (7), or eight- (8) membered mono- or bicyclic ring, each mono- or bicyclic ring being fully saturated or partially unsaturated, and having 1-4 heteroatoms selected from the group consisting of oxygen, sulfur, and nitrogen; het<sup>1</sup> being optionally substituted by 1-2 substituents selected from C<sub>1</sub>-C<sub>4</sub>alkyl, amino, C<sub>1</sub>-C<sub>4</sub>alkylamino, C<sub>1</sub>-C<sub>4</sub>alkyloxy, halogen -CN, =O, and =S;

each m is independently 0, 1, or 2; and

each n is independently 1, 2, or 3.

21. (Previously Presented) The method of claim 20 wherein said compound is administered to the mammal orally, parenterally, transdermally, or topically in a pharmaceutical composition.

22. (Original) The method of claim 20 wherein said compound is administered in an amount of from about 0.1 to about 100 mg/kg of body weight/day.

23. (Original) The method of claim 20 wherein said compound is administered in an amount of from about 1 to about 50 mg/kg of body weight/day.

24. (Canceled)

25. (Canceled)

26. (Previously Presented) The method of claim 20 wherein the composition comprises an enantiomerically enriched form of a compound of formula I.

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27. (Previously Presented) The method of claim 26, wherein the composition comprises at least 50% of one enantiomer of a compound of formula I relative to the other enantiomer of the compound.

28. (Previously Presented) The method of claim 27, wherein the composition comprises at least 80% of one enantiomer of a compound of formula I relative to the other enantiomer of the compound.

29. (Previously Presented) The method of claim 27, wherein the composition comprises at least 90% of one enantiomer of a compound of formula I relative to the other enantiomer of the compound.

30. (Previously Presented) The method of claim 20 wherein the compound comprises

(2S,4R,4aR)-4-isopropyl-2-methyl-8-nitro-1,2,4,4a-tetrahydro-2'H,6H-spiro[1,4-oxazino[4,3-a]quinoline-5,5'-pyrimidine]-2',4',6'(1'H,3'H)-trione;

(2R,4S,4aS)-2,4-diethyl-8-nitro-1,2,4,4a-tetrahydro-2'H,6H-spiro[1,4-oxazino[4,3-a]quinoline-5,5'-pyrimidine]-2',4',6'(1'H,3'H)-trione;

(2R,4S,4aS)-2,4-dimethyl-8-nitro-1,2,4,4a-tetrahydro-2'H,6H-spiro[1,4-oxazino[4,3-a]quinoline-5,5'-pyrimidine]-2',4',6'(1'H,3'H)-trione;

(2R,4S,4aS)-8-acetyl-9,10-difluoro-2,4-dimethyl-1,2,4,4a-tetrahydro-2'H,6H-spiro[1,4-oxazino[4,3-a]quinoline-5,5'-pyrimidine]-2',4',6'(1'H,3'H)-trione;

(2R,4S,4aS)-10-fluoro-2,4-dimethyl-8-nitro-1,2,4,4a-tetrahydro-2'H,6H-spiro[1,4-oxazino[4,3-a]quinoline-5,5'-pyrimidine]-2',4',6'(1'H,3'H)-trione;

(2R,4S,4aS)-2,4-dimethyl-8-[5-(trifluoromethyl)-1,2,4-oxadiazol-3-yl]-1,2,4,4a-tetrahydro-2'H,6H-spiro[1,4-oxazino[4,3-a]quinoline-5,5'-pyrimidine]-2',4',6'(1'H,3'H)-trione;

1,2,4,4a-Tetrahydro-2,4-dimethyl-8-nitrospiro[[1,4]oxazino[4,3-a]quinoline-5(6H),5'(2'H)-pyrimidine]-2',4',6'(1'H,3'H)-trione;

(2S,4R,4aR)-2-isopropyl-4-methyl-8-nitro-1,2,4,4a-tetrahydro-2'H,6H-spiro[1,4-oxazino[4,3-a]quinoline-5,5'-pyrimidine]-2',4',6'(1'H,3'H)-trione;

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(2S,4R,4aR)-2-isopropyl-4-methyl-8-nitro-1,2,4,4a-tetrahydro-2'H,6H-spiro[1,4-oxazino[4,3-a]quinoline-5,5'-pyrimidine]-2',4',6'(1'H,3'H)-trione;

(2R,4S,4aS)-2,4-diisopropyl-8-nitro-1,2,4,4a-tetrahydro-2'H,6H-spiro[1,4-oxazino[4,3-a]quinoline-5,5'-pyrimidine]-2',4',6'(1'H,3'H)-trione;

(2R,4S,4aS)-2,4-dimethyl-8-(3-methyl-1,2,4-oxadiazol-5-yl)-1,2,4,4a-tetrahydro-2'H,6H-spiro[1,4-oxazino[4,3-a]quinoline-5,5'-pyrimidine]-2',4',6'(1'H,3'H)-trione;

(2S,4R,4aR)-8-acetyl-10-fluoro-2,4-dimethyl-1,2,4,4a-tetrahydro-2'H,6H-spiro[1,4-oxazino[4,3-a]quinoline-5,5'-pyrimidine]-2',4',6'(1'H,3'H)-trione;

8-bromo-2,4-dimethyl-10-nitro-1,2,4,4a-tetrahydro-2'H,6H-spiro[1,4-oxazino[4,3-a]quinoline-5,5'-pyrimidine]-2',4',6'(1'H,3'H)-trione;

(2R,4S,4aS)-2,4-dimethyl-8-(5-methyl-1,2,4-oxadiazol-3-yl)-1,2,4,4a-tetrahydro-2'H,6H-spiro[1,4-oxazino[4,3-a]quinoline-5,5'-pyrimidine]-2',4',6'(1'H,3'H)-trione;

(2S,4S,4aS)-4-methyl-8-nitro-2-(trifluoromethyl)-1,2,4,4a-tetrahydro-2'H,6H-spiro[1,4-oxazino[4,3-a]quinoline-5,5'-pyrimidine]-2',4',6'(1'H,3'H)-trione;

4-azido-3-iodobenzyl (2R,4S,4aS)-2,4-dimethyl-2',4',6'-trioxo-1,1',2,3',4,4',4a,6'-octahydro-2'H,6H-spiro[1,4-oxazino[4,3-a]quinoline-5,5'-pyrimidine]-8-carboxylate; or

(2S,4S,4aS)-2,4-dimethyl-8-nitro-1,2,4,4a-tetrahydro-2'H,6H-spiro[1,4-oxazino[4,3-a]quinoline-5,5'-pyrimidine]-2',4',6'(1'H,3'H)-trione.

31. (Previously Presented) The method of claim 20 wherein:

when each R<sub>4</sub> is H, that R<sub>1</sub> and R<sub>2</sub> are not simultaneously H, CN, or -C(O)-OCH<sub>3</sub> or that R<sub>1</sub> is not CN and R<sub>2</sub> is not -C(O)-OC<sub>1-4</sub>alkyl;

when the compound is 1,2,4,4a-Tetrahydro-cis-2,4-dimethyl-8-nitrospiro[1,4]oxazino[4,3-a]quinoline-5(6H), 5' (2' H)-pyrimidine]-2',4',6' (1' H,3' H)-trione that the compound is enantiomerically enriched (-) form of (2R,4S,4aS)-2,4-dimethyl-8-nitro-1,2,4,4a-tetrahydro-2'H,6H-spiro[1,4-oxazino[4,3-a]quinoline-5,5'-pyrimidine]-2',4',6'(1'H,3'H)-trione.

32. (Previously Presented) The method of claim 20 wherein the compound of formula I is administered as a pharmaceutical composition, wherein the pharmaceutical composition additionally comprises a pharmaceutically acceptable carrier.

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33. (Previously Presented) The method of claim 4 wherein:

R<sup>1</sup> is -C(O)R<sup>6</sup>;

R<sup>2</sup> is -C(O)R<sup>7</sup>;

each R<sup>4</sup> is independently selected from H, F and heteroaryl optionally substituted by one or more R<sup>8</sup>;

each R<sup>5</sup> is H;

R<sup>6</sup> and R<sup>7</sup> form -N(R<sup>17</sup>)-C(O)-N(R<sup>17</sup>)-;

each R<sup>17</sup> is H;

R<sup>20</sup> is H; and

X is -C(H)(C<sub>1-4</sub> alkyl)-O-C(H)(C<sub>1-4</sub> alkyl)-.

34. (Previously Presented) The method of claim 33 wherein R<sup>8</sup> is C<sub>1-7</sub> alkyl.

35. (Previously Presented) The method of claim 13 wherein:

R<sup>1</sup> is -C(O)R<sup>6</sup>;

R<sup>2</sup> is -C(O)R<sup>7</sup>;

each R<sup>3</sup> is H;

each R<sup>4</sup> is independently selected from H, F and heteroaryl optionally substituted by one or more R<sup>8</sup>;

each R<sup>5</sup> is H;

R<sup>6</sup> and R<sup>7</sup> form -N(R<sup>17</sup>)-C(O)-N(R<sup>17</sup>)-;

each R<sup>15</sup> is C<sub>1-7</sub> alkyl;

each R<sup>17</sup> is H; and

R<sup>20</sup> is H.

36. (Previously Presented) The method of claim 35 wherein R<sup>8</sup> is C<sub>1-7</sub> alkyl.